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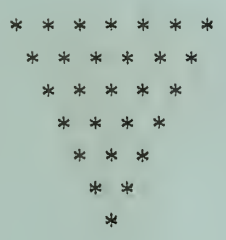
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for the

RIO GRANDE DRAINAGE BASIN

May 1, 1940



Issued by the
United States Department of Agriculture
Soil Conservation Service
Division of Irrigation
In Cooperation with
The Colorado Agricultural Experiment Station
Colorado State College
Fort Collins, Colorado

May 6, 1940

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RIO GRANDE BASIN

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The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Division of Irrigation, Soil Conservation Service of the U. S. Department of Agriculture, in cooperation with other Federal Bureaus, State Departments, and local organizations. The snow measurements are made principally by field personnel of the U. S. Forest Service and Colorado State Engineer. This work is otherwise conducted cooperatively with the State Engineers of Colorado and New Mexico, Colorado Agricultural Experiment Station, and various municipalities, irrigation associations and others. Precipitation records are supplied by the U.S. Weather Bureau.

PRECIPITATION DATA
(Based on incomplete returns)

WATERSHED	STATE	Precipitation October 1 to April 30	Departure from Normal	Precipitation April	Departure from Normal
		Inches	Inches	Inches	Inches
Canadian	New Mexico	4.65	-0.47	0.86	-0.33
Rio Grande	Colorado	8.58	-1.23	1.55	-0.01
Rio Grande	New Mexico	6.84	-0.69	0.47	-0.68
Pecos	New Mexico	4.71	-0.45	0.74	-0.15

SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth			Water Content			Number Courses Reporting 1940	Snow Density			1940 Water Content in percent of	
	Five Year Avg.*	1939	1940	Five Year Avg.*	1939	1940		Five year Avg.*	1939	1940	Five Year Avg.*	1939
	In.	In.	In.	In.	In.	In.		Percent	Percent	Percent		
Rio Grande	15.3	12.7	9.5	7.0	5.1	4.1	8	46	40	43	59	80

*Some for shorter periods.

OUTLOOK

The accumulated precipitation since October 1, 1939 over the watershed of the Rio Grande and Canadian in New Mexico and Colorado is considerably below normal and, during April, there was a shortage in precipitation except in the San Luis Valley. Most of the snow at low elevations disappeared during April. In the high mountain areas in Colorado the average water content of the snow remaining is slightly less than it was last year. On May 1, 1940 the water content of the snow was 4.1 inches; on this date in 1939 the water content for these courses was 5.1 inches, and the average water content for the last five years was 7.0 inches.

Reservoir storage on the Rio Grande in the San Luis Valley on May 1, was 26 percent of what it was last year, and 48 percent of the ten-year average. Storage in reservoirs on the Rio Grande in New Mexico was 64 percent of what it was last year on May 1 and 81 percent of the ten-year average for this date. The soil moisture condition is fair in the San Luis Valley and normal in the Rio Grande Valley in New Mexico. In the pumping area of the Roswell basin the lowering of the water table from January 1939 to January 1940 ranged from 1 to 6 feet in the northern part, and from 1 to 3 feet in the southern part although there were some areas where a rise occurred.

The deficiency in snow cover in the mountain areas, the subnormal precipitation generally over this drainage area during April, together with the relatively small amount of water in storage in reservoirs at this time, make the present outlook for the irrigation water supply the coming season unfavorable. There is insufficient water in snow storage and in the reservoirs to supply the irrigation needs of this valley and, because of these extreme conditions, the crop production will depend largely upon additional water from timely rains during the summer growing season.

RIO GRANDE WATERSHED

Summary of Federal and State Cooperative Snow Surveys
Issued May 6, 1940, at Fort Collins, Colo.

No.	Main Drainage and Snow Course	Local Drainage	Location: State	Location: Locality	Location: Description	Elev.	National Forest	May 1 Snow Course Measurements: Av. Snow Depth: Avg.	1939	1940	Av. Water Content: Avg.	1939	1940
								In.	In.	In.	In.	In.	In.
	RIO GRANDE												
26	Wolf Creek Pass	South Fork	Colo.	Wolf Cr. Pass	4-37N-2E	10000	Rio Grande	48.5	30.4	23.2	22.8	18.3	9.8
27	Upper Rio Grande	Rio Grande	"	RioGrande Res.	13-40N-4W	9350	" "	0.0	0.0	0.0	0.0	0.0	0.0
47	Silver Lakes	Alamosa R.	"	1mi.S.Silver L.	15-36N-5E	9600	" "	0.0	0.0	0.0	0.0	0.0	0.0
49	River Springs	Conejos R.	"	10mi.W.Mogote	25-33N-6E	9300	" "	1.5	0.0	0.0	0.5	0.0	0.0
74	LaVeta Pass #2	SanCristo Cr.	"	LaVeta Pass	22-28S-70W	9300	SanCristoGr	--	0.0	--	--	0.0	--
75	Ute Ridge	Rio Grande	"	Rio Grande Res.	31-41N-4W	9700	Rio Grande	0.0	0.0	0.0	0.0	0.0	0.0
76	Summitville	Wightman Cr.	"	Summitville	30-37N-4E	11500	" "	43.0	47.8	38.1	16.0	16.7	15.4
77	Cumbres Pass #2	Los Pinos R.	"	Cumbres Pass	17-32N-5E	10000	" "	29.3+	13.1	14.9	17.1+	5.6	7.6
80	Santa Maria	N.Clear Cr.	"	Santa Maria Res.	8-41N-2W	9700	" "	0.0	0.0	0.0	0.0	0.0	0.0
82	Culebra	Culebra R.	"	12mi.E.SanLuis	37.2N105.2W	10000	SanCristoGr.	--	--	10.7	--	--	4.2
84	Fort Garland	Big Ute Cr.	"	6mi.N.Ft.Garland	13-29N-72W	8200	" " "	--	--	0.0	--	--	0.0
					Average for Drainage			15.3	12.7	9.5	7.0	5.1	4.1

+Readings on original course

RESERVOIR STORAGE

Reservoir Storage in Acre-Feet, Rio Grande Drainage, as of May 1, for the Years 1931-1940 inclusive.
(Based on data gathered by the State Engineer of Colorado and the U. S. Bureau of Reclamation)
A = Percentage of capacity. B = Percentage of 10-year average. Units in thousands of acre-feet.

Reservoir	Capacity	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	10-yr. Avg.♪	A	B
	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	Ac-ft	%	%
Rio Grande	45.8	5.7	2.7	15.3	4.9	0.3	23.6	16.2	17.5	36.7	4.7	12.8	10	37
Santa Maria	45.0	12.0	4.8	7.0	6.8	4.6	6.9	9.5	10.8	15.1	3.8	8.1	8	47
Sanchez	25.9	12.7	10.2	10.2	12.0	7.4	13.8	17.6	19.2	22.9	10.9	13.7	42	80
Terrace	17.7	1.0	1.9	0.6	1.4	1.3	6.4	4.5	9.6	7.5	1.7	3.6	10	47
Continental	26.7	0.9	0.0	6.5	2.6	0.8	3.3	0.5	4.0	4.3	1.0	2.4	4	42
Elephant Butte	2273.7	1238.2*	1168.0*	1275.3*	1001.6*	488.0*	782.5	917.1	1099.0	1324.0	803.2	1009.7	35	80
El Vado	226.0	---	---	---	---	---	---	---	148.6	87.4	113.7	116.6	50	98
Caballo	365.0	---	---	---	---	---	---	0	14.5	44.5	17.3	25.4	5	68

♪ Some averages for shorter periods
*Based on capacity of 2,407,100 acre-feet.

(6006-40)